131 length and a mile wide. "Howar" means "Young Camel" and the island was so called because it is similar in shape though smaller than Bahrain, and so was described as its offspring.

There are many other little islands in the Bahrain archipelago ; some contain small villages or fishermen's huts while others are deserted except during the occasional visits of migratory birds or pearl divers who come to the islands during the diving season to draw water from the freshwater springs.

311 Along the northern coast of Bahrain there is a narrow strip of land
137 some three miles wide which is under cultivation. The fertile gardens containing date and loz (Indian almond or Terminalia) pomegranate, banana and fig trees are irrigated from many natural springs and artesian wells. But in the waterless areas south of the cultivation, in the centre of the island, only sparse and hardy desert flora exists. Although this desert may seem bare to the eyes of a visitor accustomed to the lush greenness of Europe or the States, it is in fact covered with a great variety of desert plants which were found, in a recent survey, to include some 200 species.

● 133 Beyond the cultivated area the land is barren and the landscape consists of low rolling hills with numerous rocky cliffs and dry wadis. Most of the Islands of Bahrain are surfaced with hard limestone rock, covered in many places with sand dunes, and, in the case of the main island, with pre-historic tumuli. From the shore line the topography rises gradually towards the centre where it again drops off into a basin surrounded by steep cliffs. Towards the centre of the basin there is a very pronounced rocky promontory known as "Jebal ad-Dukhan," the "Mountain of Smoke," a name given to it because of the vague and hazy appearance it often presents, particularly during the hot summer months. The Jebal is only 450 feet above sea level and 250 feet above the surrounding plain but often, when mist surrounds its base, it gives the impression of being a considerable mountain.

Although Bahrain is a small country yet it displays a very varied
226 landscape and many surprising contrasts between old and new. It
228 is primarily a sea faring state. The brilliant blue and green waters, studded with white sails, which surround the islands provide the people of Bahrain with fish, which they catch from boats and in traps, fresh water, from the submarine springs, coral stone for building and pearls which made Bahrain such an important trading centre in the past.
361 The coastal towns have an attractive appearance. Manama's water front is lined with high white houses and beyond the town date gardens extend in an unbroken line down to the water's edge. Roads in the northern part of Bahrain pass through avenues of tall and stately date palms, bearing great bunches of golden, red and yellow fruit during
133 the summer months. The south of the island is a miniature desert and in the foothills around the Jebal there are many little wadis which
ooo after the rainy season are bright with desert flowers and shrubs. Even

laughter comes from the Club House Swimming Bath and in the evenings sports of all kinds take place inside the camp. Today Awali is a town of some 400 houses inhabited by 2,000 Europeans and Americans. Shady trees line the roads and in fact there is little to suggest the presence of oil. The roads are surfaced with it, but otherwise it is not visible, though oil is the *raison d'etre* of this town set in such an inhospitable situation, to which water has to be piped from miles away and where to plant a tree a pneumatic drill is required to pierce the rock on which the town is built.

SAKHIR

Driving from Awali to Zellaq the traveller will notice a group of large buildings on the south of the road near the foot of the Jebal. This is Sakhir, founded by Shaikh Muhammad bin Khalifa (1843-67, d. 1890), but the majority of buildings which exist today were built by the late Ruler of Bahrain. The present Ruler makes little use of Sakhir, and the attractive mosques, balconied dwelling houses and high roofed rooms are now deserted ; the only human beings who remain are the Bedouin in charge of the horses and camels which are still kept there. The climate of Sakhir is excellent and in the spring there are fields of grass which provide grazing both for domestic animals, gazelle and hare. When Sakhir was occupied Saluqis were much in evidence, Shaikh Hamed was a great lover of this fine breed of dogs and his favourite hound, Housha, followed him wherever he went. It should be remembered that Sakhir is the private property of the Ruler, from whom permission must be obtained before it is visited.

JEBAL AD-DUKHAN

The "Mountain" of Bahrain has already been mentioned in the Introduction, but it deserves further notice. From its peak, which is marked by a trigonometry marker, it is possible to see, on a clear day, the entire area of Bahrain from Manama and Muharraq on the north to Ras al-Barr, while on the east and west the sea is even nearer. From the peak an excellent bird's eye view of Awali can be seen, and, at night, the flares at Dhahran and at Dukhan in Qatar are visible. The strange formation of the island, with the rim-rock and the central depression can be seen from the Jebal. At the head of a wadi facing towards Awali is the Jebal cave, some 15 × 35 × 6 ft., which is hollowed out of the rock, probably by water erosion for the fantastic patterns on the walls would seem to point to nature's rather than man's handiwork.

JAW AND DOUR (DAR AL-MANADIL)

On the east coast of Bahrain about a mile south of the highest peak of the Jebal are the villages of Dour and Jaw, similar in character and appearance and the southernmost inhabited villages on the east coast of Bahrain. The villages are about a mile apart and both are on the shore, they consist of a poor type of stone and gypsum hut inhabited

There is a bus service between Hedd and Muharraq and also a few taxi cabs in the town.

In addition to the towns of Muharraq and Hedd the island of Muharraq is fringed by many villages ; going north round the coast from Muharraq town they include Busatin, Dair, Raiya, Galali and Arad. The first three villages contain many homes of members of the Ruling Family and are especially popular in the summer when the Muharraq weather is considered superior to that of Manama. Galali is a sizeable village inhabited by fishermen and industrial workers, while Arad is the centre of the agriculture of the island and is built near a large pool in the centre of the date gardens on Arad peninsular. The inhabitants of the village work in the gardens, but on the shores of the Bay near the old Omani fort is a large village built entirely of barastis. In the summer this temporary village is entirely filled with people from Muharraq who spend the nights here, crossing by ferry every day to Muharraq town.

In general Muharraq island is very low-lying, so much so that it was thought at one time that there was a danger of the sea affecting the efficiency of the Airport, but this has been removed by pumping stations around the field which remove, when necessary, surplus water from the runways. It was, however, found necessary to build a raised road from Muharraq town to Hedd, for when there was any rain or an exceptionally high tide the road was often blocked.

UMM ASH-SHAGAR ISLANDS AND UMM ASH-SHIYAIRA

These are the two islands that lie to the south of Hedd town; the former, to the north, is covered with small stone and barasti houses; the second, whose name is a diminutive of the first, contains only barastis and is inhabited by fishermen.

THE ISLANDS

In addition to these two, there are several other small islands south of Muharraq, of which the three largest, although none of them is more than a few hundred square yards in area, are Halat-as-Suluta, Halat-al-Khulaifat and Abu Mahur.

The first two islands lie to the south of Arad peninsular and at low tide they are joined by a sand-bar which permits walking between them. They contain small villages, whose people derive their livlihood from fishing, and they are lucky enough to have on them fresh water springs. Abu Mahur, the third and largest island, is in fact named after one of the largest of these springs, which is in the sea a short distance from the shore. The fort of Abu Mahur is now in ruins but the island is now used as a quarantine station.

The fresh water submarine springs south of Muharraq and the manner in which the people obtain water from them has astounded

of the Egg," a small village with many seafaring inhabitants. To the north of Sitra there is a very pleasant sandy beach looking towards Umm a-Hasan where there is excellent bathing; the view also includes Nabih Salih and Jaziyra. There is deep water to the north of Sitra, and it is here that the Bahrain Government is building the new Port of Manama with a pier running into deep water from the shore between Umm al-Hasan and Jufair.

JIDDA

This island is about 2½ miles from Budaiya. It is small and rocky and in appearance unlike any of the other Bahrain Islands. Its high cliffs rise abruptly from the water and a few fort-like buildings are silhouetted against the sky-line. On the south side of the island there is a level strip of land which is extensively cultivated. Jidda is Bahrain's penal settlement; here all long term prisoners are detained, spending their time cutting stone, weaving and working in the gardens. There is a small house on the top of the cliffs above the jetty which catches all the wind in the summer and which is used by the Adviser to the Bahrain Government. Being a prison island, Jidda is forbidden to general visitors.

The stone quarries at Jidda are of great age and it is likely that the large stones which line the graves in the burial mounds were cut here. There is an Arabic inscription roughly cut on one of the cliffs which reads as follows :

"During the month of Shaban in the year 968 (April/May, 1561) there was completed the cutting of the 100,000th rock for the mending of the tower of the Bahrain fort in the wazirate of the Great Wazir Jilal ad-Din Murad Mahmud by the hand of the slave . . . " (a few words after this are unreadable).

UMM AN-NASAAN

This, the second largest of the Bahrain islands, lies a few miles across the shallow water to the south of Jidda. It is sandy and flat, with the exception of two small limestone hills towards its centre which break the monotony of its shape. At the north end of the island there are several natural springs and artesian wells from which extensive date gardens are irrigated; they were planted by the late Ruler of Bahrain, H.H. Shaikh Hamed, who also established on the island a herd of black buck and gazelle, the former being imported from India and the latter from the mainland of Bahrain.

There is evidence of ancient habitations on Umm an-Nasan, foundations of many old houses are visible and sherds of pottery can be picked up. Local legend has it that Nasaan, after whom the island is named, was one of the early rulers of Bahrain, but this legend has not been substantiated by historical research.

1: Belgrave F-3 (no date) 1953 MZ2 Bahrain MZ2

HOWAR ISLANDS

This group of 16 islands is about twelve miles south-east of Ras al-Barr. It consists of one large island, Howar itself, which is about eleven miles long and a mile in breadth, and fifteen other islands much smaller in size. In the centre of the main island there is a rocky eminence known as al-Jebal. There are only two villages, the larger one at the northern end on the shore of the bay consists of stone huts with mat roofs (Kubbar); it also has a small mosque. The Bahrain State Police maintain a garrison on the island, in a fort which dominates the bay and from the roof of which the Qatar peninsular is visible. The islands are inhabited by fishermen from Bahrain and also by men who come to cut gypsum which they sell in Bahrain. The water supply of the island is very limited and consists of old cisterns cut out of living rock which are filled by rain. Attempts to drill for water have failed, but in the years when there is normal or plentiful rainfall the island provides good grazing for camels and sheep. Fishing in the bay is excellent, the water is comparatively deep and a launch can come alongside the short jetty. The southern tip of the island is so close to the Qatar coast that when the tide is out boats cannot pass between the island and the shore, but at one place between Howar and Qatar, a long narrow channel has been hewn out of the coral sea bed to allow boats to pass through a shallow stretch of water. This submarine canal was made by a certain Isa ibn Tarif, a notorious pirate, who played an important part in the history of Bahrain during the middle of the last century; he used the channel as a passage to his fortress on the Qatar coast from where he sallied forth to attack the shipping around Bahrain.

The climate of Howar is noticeably better than in Bahrain, it is drier and cooler during the summer nights, but has no other amenities to attract visitors fleeing from the dampness of Bahrain, and at present its only visitors go there for work and not for pleasure.

ZUBARA

On the coast of the Qatar peninsular opposite the Bahraini village of Jaw is the ruined town and the bay of Zubara, which has already been mentioned in detail in the history of Bahrain in Part II. The town of Zubara is on the east of the bay and stretches about 1½ miles along the coast and 2 miles inland. The ruins of the town are still impressive. The high wall which surrounds the wide straight streets and the fine mosques, the obvious care with which the town was laid out, speaks well for those who governed it. Further east of the town, at a distance of about two miles across the desert, is the great fort; some of the walls and the mosque are still standing. At the corners of the walls are towers with slits for rifles and the domed roof of the mosque presents an attractive picture. The whole building is made from local stone and little gypsum was used in its construction. Within the fort there are two wells one of which is dry, but the other still

4: Bahrain G-5 (no date) 1953 MZ2 Bahrain MZ2

659 133 **Aerial Survey.** One of the most important items in general use is a map, and throughout history it has been found that the mapping of new areas has been among the first of man's activities.

1/4 The first reliable maps of Bahrain was produced in 1905, following a survey of the island which was carried out under the direction of Lieut. Colonel F. B. Longe, R.E., Surveyor-General of India. This map, copies of which can still be obtained in the Land Department, is a very good map and shows towns, villages, tracks, mounds and contours, but as it was produced many years ago, since when there have been many changes in the towns and villages and in the area under cultivation, it was thought desirable to carry out a new survey. Messrs. Hunting Aerosurveys Ltd., were commissioned to make an aerial survey of Muharraq Island, Manama town and the area south of Manama as far as the coast. This work was carried out in December 1951. In May 1952 the survey was extended by arrangement with the Bahrain Petroleum Company to cover the whole of Bahrain Island and the neighbouring islands.

During the first survey both vertical and oblique photographs were taken and by the end of 1952 a considerable amount of interesting material had arrived in Bahrain. It consisted of 51 oblique photographs produced in two sizes, 10-in. × 12-in. and 5-in. × 5 in. The series of vertical photographs covered the whole of the area which had been included in the survey.

From the vertical photographs maps were produced, one covering the whole of Muharraq Island, Muharraq town in seven sections at a scale of 200 feet to an inch, the area south east of Manama as far as Jufair, also in seven sections, on a scale of 200 feet to an inch and the town of Manama in thirteen sections, one for each district, a scale of 100 feet to an inch. In addition, mosaics of Manama and Muharraq were produced. All these photographs and mosaics are on sale to the public and can be obtained from the Land Department.

Following the first survey, the Bahrain Petroleum Company made available to the Government all the material which they had obtained from the aerial survey which had been carried out on their behalf and they also provided valuable information from their land surveys which included an initial survey of the town of Manama which was done some months before the aerial work. Last year all the available information was collected and a map was hand-drawn on the basis of this information. Hunting Aerosurveys was instructed to produce a map of Bahrain, in four colours, on the scale of 1 inch to the mile. The map is now in the hands of the printers. It will cover the whole of Bahrain and Muharraq islands as well as the nearby smaller islands, but not the Hawar group. It will contain inserts showing the town areas of Manama, Muharraq and Awali. This map will be on sale in London and New York, as well as in Bahrain, on plain paper or mounted on linen or folded on linen. To produce this map information has been obtained from the Survey of India Office, the Royal Geographical Society and the Bahrain Petroleum Company and from the War Office map of 1939 and with the information now available it will be a reasonable task to revise the map, in future, should it require again bringing up to date after some years have passed.

SUNNI WAQF DEPARTMENT

(From the report of Shaikh Atiyyatallah bin Abdurrehman AlKhalifah, Superintendent of the Department)

647 871 795 The Department is controlled by a committee of Sunni merchants and by a Superintendent and clerical staff, the latter are paid by the Government. All Waqf property is administered by the Department which pays out of the revenue collected from the property the salaries and emoluments of mosque officials, it also contributes towards the cost of the religious school in Manama and towards the expenses of some young men who are studying religion abroad.

131 Arabia and somewhat closer to the Qatar Peninsula. Manama, the capital, is at 26°13′ north and 50°35′ east.[1]

The archipelago is formed by five principal islands and a number of smaller ones, of which only one is of real importance. It is variously called Awal,[2] Manama after the principal city, or more commonly just Bahrein. Curiously shaped in the semblance of a sea horse,[3] the island is only twenty miles long and ten miles across at the widest point.

312 Bahrein would be totally uninhabitable if it were not for an abundance of fresh water (believed to come through channels under the sea bottom from somewhere in Arabia, probably the Tuwaik mountains) which supplies about two hundred springs and many artesian wells. It is likely that some of these springs were formerly under the sea, since the islands are surrounded by coral formations and in such places the sea always tends to become shallower and dry land to increase. In the northern part of the principal island the water is plentiful enough to produce luxuriant gardens and palm groves, and on the other islands irrigation farming is carried on extensively.

Fresh water springs are also found on the shallow ocean bottom. In former times the natives dived into the sea to collect drinking water in collapsed goatskins. Some water sellers used more scientific methods, however, sinking bamboo tubes to the level of the springs, then collecting the water as it rose above sea level.

GEOLOGY

133 Bahrein lies on a portion of the ancient Tethys geosynclinal belt represented today by the Persian Gulf. The formation of the principal island is the result of pressure from the mountainous masses of Persia against the crystalline platform of central Asia, the thrust being absorbed by a gentle folding in the

1. The British Political Agency is at lat. 26°14′09.95″ N. and long. 50°35′00.39″ E.
2. The etymology of the word *Awal* is "fish" or "whale."
3. See map, back of book.

geosyncline. The structure of Bahrein is that of a large, single, closed dome covering the entire faulting.

Rocks exposed at the surface consist of:

1. Recent sands and coquinas forming flat, raised beaches surrounding the island from which the surface rises gradually to an elevation 150 to 200 feet above sea level. At this point it breaks away into inward-facing cliffs eighty to one hundred feet high completely surrounding an oval central depression about twelve miles long and four wide.
2. Pleistocene sands, cross bedded and probably wind deposited, lying in the canyons.
3. Meiocene silicious clay covering a very limited area.
4. Eocene limestone covering most of the island, the central region of which, known as "Jabal Dukhān" or "Mountain of Smoke," rises to a point 439 feet above sea level. The limestone is very porous and is the source of most of the water in the northern half of the island.

Because of the coral formations surrounding the islands, the sea approach is shallow, so that only vessels of very light draft can land. Ships drawing as much as twenty feet anchor from two to four miles out in the Gulf, and those of greater draft from fourteen to seventeen miles out. Shallow boats are used for all transfers of passengers or freight, and the Standard Oil Company was obliged to construct a submarine pipeline three miles long to convey oil from Bahrein Island to its tankers.

CLIMATE

The Bahrein Islands possess one of the most trying climates in the world. It is intensely hot for about seven months of the year and the humidity stays near the saturation point. The annual average temperature is 78° F. with a corresponding relative humidity of 73%. The hottest month is August, when the mean temperature is 92° and between noon and 3 P.M. may

8: Qubain S-5 (1952-53) MZ2 Bahrain MZ2

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491
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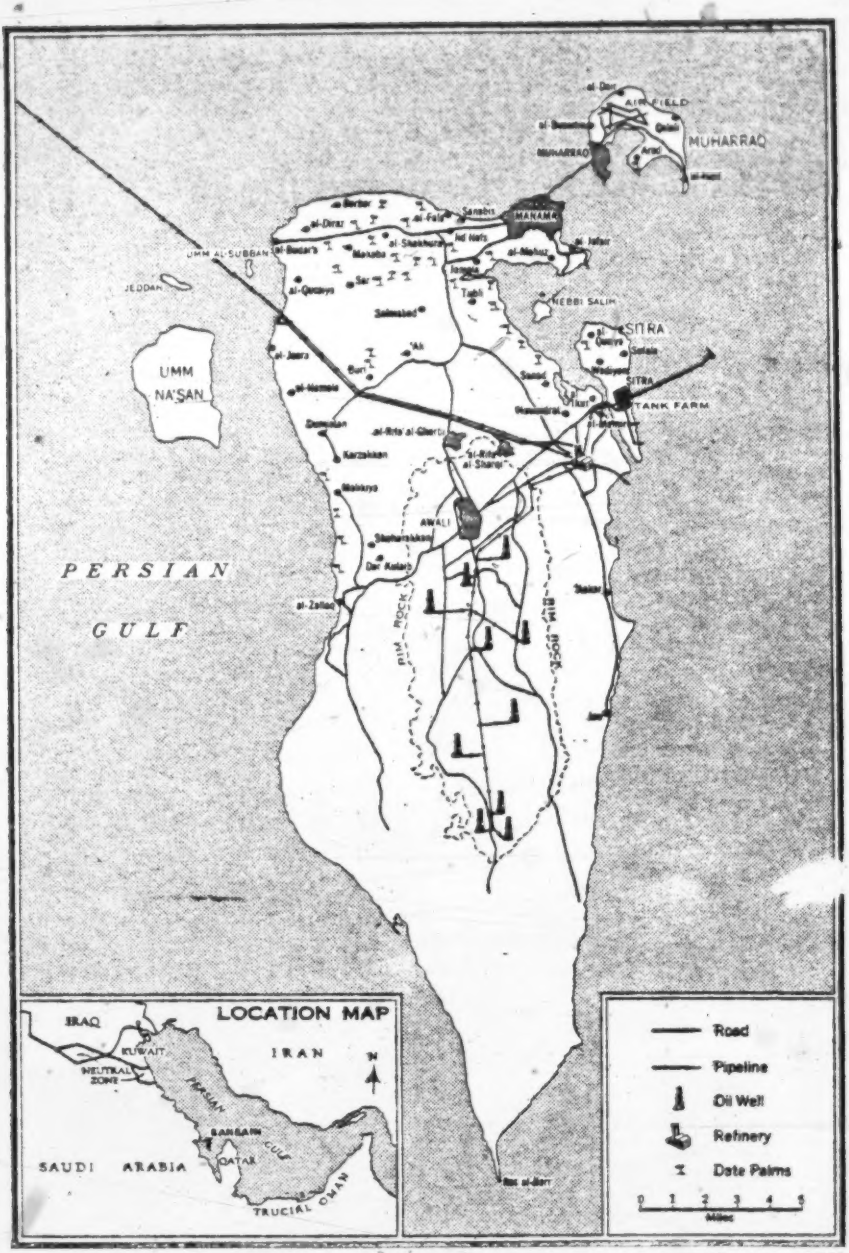
382
● 133
135



(See page 269)

The Shaykhdom of Bahrain

facing p. 239

3:Royal Institute of International Affairs U-4 (no date)1954 M1 Middle East
Bahrain MZ2
Kuwait M11
Saudi Arabia MJ1

companies may need to be defined now that one concessionaire seems likely to create revenue; problems may also arise if, as a result of oil developments, it is planted with a population that will need to be endowed with public services and, no doubt, with a system of taxation.

BAHRAIN

The Bahrain Archipelago is a group of islands in the Gulf of Bahrain, which is bounded on the east by the Qatar Peninsula and on the west by the mainland coast of al-Hasa. Its total area is 213 square miles. The principal island—Bahrain itself—is about thirty miles long and ten miles wide. It is low-lying and its northern end is well watered by fresh water springs and produces good date crops. Citrus fruit and lucerne are also grown. The oilfields lie round the rocky cluster of hills known as Jebel Dukhan (Hill of Smoke), which is in the barren centre of the island.

To the north-east of Bahrain Island, and joined to it by a causeway and motor road, is the low, sandy island of Muharraq, and between the two islands is a good deep-water harbour (Khor Kaliya). It is used as a small British naval base; an American admiral also flies his flag there. Nearby there is a second, but shallow harbour (Bahrain harbour), which faces north and is usefully equipped. The natural aerodrome on Muharraq Island has been developed into the largest commercial airfield in the Persian Gulf and now serves the airliners of all nations. It is also used by the RAF, and the whine of jet aircraft is a commonplace. The south end of the island of Bahrain is low-lying and sandy. The climate, though oppressive in summer owing to the prevalent heat and damp of the western shores of the Persian Gulf, is more humid and less windy than that of Kuwait. The population of the Archipelago was 109,650 when a census was taken in 1950.[1]

The capital and the seat of government is the port of Manama.[2] It is generally referred to as Bahrain, and is situated between the two harbours. It has a population of 39,648, which includes many rich Arab, Persian, and Indian merchants, as well as some 300 Europeans and Americans. The second town, Muharraq, on Muharraq Island, has a population of 24,566 which is purely Arab.

The British Political Agency is in Manama town, which also boasts an electricity station, a wireless station, post offices, hospitals, clubs, public gardens, and up-to-date schools. The town is well supplied with good motor roads, and there are

[1] 1952 estimate, 115,000. [2] Population: 1950, 39,648; 1952 (estimate), 45,000.

63:Simmons et al G-5 (1941-1951) 1954
M1 Middle East
BAHRAIN MZ 2

11

Bahrain

GEOGRAPHY AND CLIMATE

619 Bahrain is an independent sheikhdom, 131 comprising a small group of islands at the entrance to the Gulf of Bahrain, between the Hasa coast of Saudi Arabia and the peninsula of Qatar. Famous since ancient times as the center of the Persian Gulf pearling industry, the islands have attained new prominence within recent years as a link in the chain of oil fields stretching from Qatar to central Iraq. The Sheikhdom has 618 had protective treaty relations with Great Britain since 1880, and the headquarters of the British Political Resident for the Persian Gulf area are established on Bahrain Island.

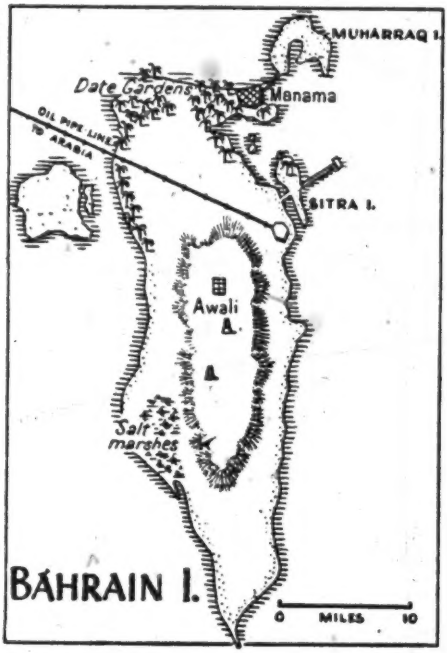
131 The archipelago consists of 5 main islands, besides several small islets, which have an aggregate area of about 210 to 225 square miles. Bahrain, the principal island, is approximately 27 miles in length and 10 133 miles in width. A narrow belt of luxuriant date gardens, supported by abundant fresh-water springs and wells, rims the northern end of the island, but the remainder is mostly barren desert. Rocky hills rise to an elevation of about 450 feet along the central ridge, Jabal ad Dukhan, while sandy wastes, broken by salt marshes, stretch toward the south.

131 Muharraq, a horseshoe-shaped sandy island, with an area of 5 to 6 square miles, is second in size and in importance. It lies northeast of Bahrain, and is separated from [491] the larger island by a narrow channel which is bridged by a 2-mile causeway, constructed in 1941. Chief among the other inhabited islands are Sitra and Nabbi Sālih, offshore to the east, and Umm Na'san, to the west.

63:Simmons et al G-5 (1941-1951) 1954
M1 Middle East
BAHRAIN M22

122 The climate is typical of the Persian Gulf region, with intense heat and high humidity for 6 months of the year. According to observations for the 10-year period 1942-51, the maximum temperatures averaged 107° to 109° F. in July and August; the minimum temperatures, 83° to 85° F. Corresponding temperatures for January, the coolest month, were 70° F. and 50° F., respectively. The rainfall, which is normally around 3 inches a year, is distributed irregularly between November and May, with the maximum precipitation from December through February. Sand-laden winds, known locally as the *shamal*, often blow with con-

[102
315
133]



p. 255 (B)

30: Gt. Britain G-5 (ca. 1918) 1920 MJ1 Saudi Arabia MJ1
BAHRAIN MZ.2

SA 361 621 311

Turks had previously established a small garrison, which was withdrawn in 1910. The ownership of the island of *Qrān*, about 36 miles NE. by E. of Ras el-Bidya', is undetermined. It has an anchorage on the S. side, and is frequented by fishermen from Bahrein, Musallamīyah, and Jinnah, who dry fish and make turtle oil.

C. BAHREIN

Area

B 101 131

The present Sheikhdom of Bahrein consists of the archipelago formed by the islands of *Bahrein*, *Muharraq*, *Umm Na'asān*, *Sitrah*, and *Nebi Sālih*, with a number of lesser islets and rocks. The whole forms a compact group almost in the middle of the gulf which separates the promontory of El-Qatar and the coast of Qatīf; the Sheikhs of Bahrein have had relations of a political nature with El-Qatar (see p. 328).

The principal island has an extreme length of 30 miles from N. to S. and a maximum breadth of 10 miles. Muharraq, which lies NE., and is separated from Bahrein by a strait 1½ miles broad, has a maximum diameter of 5½ miles, but owing to its horseshoe form contains little territory. Umm Na'asān, which is less than 4 miles by 2½ miles, lies 3 miles off the W. coast of the main island. Sitrah, separated from the E. coast by a narrow channel, has a length of 4½ miles from N. to S., and a maximum breadth of 1½ miles. Nebi Sālih, commonly called *Jezīrah*, lying in the inlet of Kabb on the E. coast of Bahrein, NW. of Sitrah, has a diameter of only ½ mile.

Physical Characteristics

B 133

Bahrein Island is mostly flat and low, but rises gradually to an interior plateau 100 to 200 ft. high, in the middle of which is an oval depression about 13 miles long from N. to S. by about 4 miles broad, containing the solitary hill Jebel Dukhān, about 440 ft. in height. The descent inwards from the plateau to the depression is in most places too steep to be practicable for animals; at the N. end there is a nearly vertical drop of 20 ft., followed by a slope of 30 ft. The plateau is extremely stony, presenting on the N. side a low cliff-line of about 15 ft., with a sandy plain below it, extending in all directions to the coast, and draining from W. to E. On the same side of the plateau is a great field of ancient tumuli covering about 12 square miles, called by the Arabs *Murāqīb*. A large inlet, Khōr

30: Gt. Britain G-5 (ca. 1918) 1920 MJ1 Saudi Arabia
BAHRAIN MZ2

133 el-Kabb, runs into the island from the E. coast, penetrating nearly to the centre. The rocks of Bahrein, except those of Jebel ed-Dukhān, which are dark, are pale-coloured limestone of the Eocene Age, sometimes sandy or argillaceous, and containing much flint or other siliceous material, with both gypsum and salt. The interior depression, like the flat shores of the island, has emerged from the sea in more recent times; the latter consists of coral rocks or shelly concrete. There is a small deposit of asphalt 3 miles SSE. of Jebel ed-Dukhān. The Bahrein islands are famous, like the oases of Hasa and Qatīf, for a number of springs, clear but slightly brackish, which are fed by the drainage from Nejd travelling down to the coast under the Dahanah desert. Some of the springs are submarine (*kaukab*); the best known of these are that called *Abu Māhur*, close to Muharraq Island, and that near the E. extremity of *Khōr Fasht*, a large coral reef about 7 miles NW. of Bahrein Island. The best water of the archipelago comes from the *Haneini* wells N. of the central depression on Bahrein, and the *Khālid* and *Umm Ghuweifah* wells on the adjoining plateau. The springs N. of the Khōr el-Kabb are generally almost pure, but warm, as in Hasa: the best known are called *'Adāri*, *Qassāri*, and *Abu Zeidān*.

312

Climate

132 Through the nearness of the sea on all sides, and abundant irrigation, the atmosphere of Bahrein is damp and heavy, with a mean humidity ranging from 79–80 per cent. of saturation. Though there is much malaria and rheumatic disease, the climate is not the most unhealthy in the Gulf. The maximum temperature, usually attained in August, is about 104° F.; the minimum, reached in December or January, about 48°. The average rainfall for the years 1910–13 was 4·55 in. The weather from October to April inclusive is not unpleasant, indoor temperature ranging between 60° and 85°. In January and February N. winds blow, and it is cold enough for fires to be acceptable. Though the weather is hot from the beginning of May to the middle of June, the heat is still tempered by the sea-breeze, and nights are fairly cool. The oppressively hot weather lasts from the middle of June to the end of September; in this period, though there may be irregular land-breezes, the thermometer remains persistently above 100° F. All rains fall between the middle of October and the middle of May, but actual wet days are few. The prevailing wind is the *Shamāl* or north-wester, which blows for forty days from the second week in June and is very violent in winter; next to this in frequency

[164]